

ABSTRACT

A method for engineering of a connection in a WDM photonic network with a plurality of flexibility sites connected by links comprises calculating a physical end-to-end route between a source node and a destination node and setting-up a communication path along said end-to-end route. An operational parameter of said communication path is continuously tested and compared with a test threshold. The path is declared established whenever the operational parameter is above said margin tolerance. The established communication path is continuously monitored by comparing the operational parameter with a maintenance threshold. A regenerator is switched into the path whenever the operational parameter is under the respective threshold, or another path is assigned to the respective connection. An adaptive channel power turn-on procedure provides for increasing gradually the power level of the transmitters in the path while measuring an error quantifier at the destination receiver until a preset error quantifier value is reached. As the connection ages, the power is increased so as to maintain the error quantifier at, or under the preset value. The path operation is controlled using a plurality of optical power/gain control loops, each for monitoring and controlling a group of optical devices, according to a set of loop rules.